CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

K-CET-CHEMISTRY-2017

Multiple Choice Question

1. If 3.01×10^{28} molecules are removed from 98 mg of H_2SO_4, then number of moles of H_2SO_4 left are

A. 0.1×10^{-2} mol

B. 0.5×10^{-3} mol

C. 1.66×10^{-3} mol

D. 9.95×10^{-2} mol

Answer: B

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2. The correct set of quantum numbers for the unpaired electrons of chlorine atom is

A. $2, 0, 0 + \frac{1}{2}$

B. $2, 1, -1 + \frac{1}{2}$

C. $3, 1, 1, \pm \frac{1}{2}$

D. $3, 0, 0 \pm \frac{1}{2}$

Answer: C

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3. The electronegativities of C, N, Si and P are in the order of

A. $P < Si < C < N$

B. $Si < P < N < C$

C. $Si < P < C < N$

D. $P < Si < N < C$

Answer: C

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4. Which of the following structures of a molecule is expected to have three bond pairs and one lone pair of electrons?

A. Tetrahedral

B. Trigonal Planar

C. Pyramidal

D. Octahedral

Answer: C

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5. Which of the following is the correct electron dot structure of N_2O molecule?

A. $: \dot{N} = N = \dot{\underset{\cdot\cdot}{O}} :$

B. $: \dot{N} - N \overset{+}{-} \dot{\underset{\cdot\cdot}{O}} :^{-}$

C. $: \dot{\underset{\cdot\cdot}{N}} = N = \dot{\underset{\cdot\cdot}{O}}$

D. $: \dot{\underset{\cdot\cdot}{N}} - N = \dot{\underset{\cdot\cdot}{O}} :$

Answer: B

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6. The pressure of real gases is less than that of ideal gas because of

A. Intermolecular attraction

B. Finite size of particles

C. Increase in the number of collisions

D. Increase in the kinetic energy of the molecules.

Answer: A

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7. A reaction hos both ΔH and ΔS - ve. The rate of reaction

A. increases with increase in temperature

B. increases with decrease in temperature

C. remains unaffected by change in temperature

D. cannot be predicted for change in temperature,

Answer: A

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8. The equilibrium constant for the reaction $N_2(g) + O_2 \Leftrightarrow 2NO(g) is 4 \times 10^{-4} at 2000K.$ In presence of a catalyst the equilibrium is attained ten times faster. Therefore the equilibrium constant in presence of catalyst at 2000 K is

A. 40×10^{-4}

B. 4×10^{-2}

C. 4×10^{-3}

D. 4×10^{-4}

Answer: D

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9. The reaction quotient 'Q.' is useful in predicting the direction of the reaction. Which of the following is incorrect?

A. If $Q_c > K_c$ the reverse reaction is favoured.

B. If $Q_c < K_c$, the forward reaction is favoured.

C. $If Q_c = K_c$ no reaction occur.

D. If $Q_c \geq K_c$, forward reaction is favoured.

Answer: D

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10. $3ClO^{-(aq)} \rightarrow ClO_3^- + 2CI^-$ is an example of

A. Oxidation reaction

B. Reduction reaction

C. Disproportionation reaction

D. Decomposition reaction.

Answer: C

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11. In the manufacture of hydrogen from water gas $(CO + H_2)$, which of the following is correct statement?

A. CO is oxidized to CO_2 with steam in the presence of a catalyst followed by absorption of CO_2 in alkali.

B. CO and H_2 are separated based on difference in their densities

C. Hydrogen is isolated by diffusion.

D. H_2 is removed by occlusion with Pd.

Answer: A

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12. Plaster of Paris is represented as

A. $CaSO_4.\ \frac{1}{2}H_2O$

B. $CaSO_4.\ H_2O$

C. $CaSO_{4.2}H_2O$

D. $CaSO_4$

Answer: A

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13. On addition of mineral acid to an aqueous solution of Borax, the following compound is formed

A. Boron hydride

B. Orthoboric acid

C. Metaboric acid

D. Pyroboric acid

Answer: B

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14. Identify the correct statement in the following:

A. n-butane and isobutane are functional isomers

B. Dimethyl ether and ethanol are chain isomers

C. Propan-1-ol and propan-2-ol are position isomers

D. Ethanoic acid and methyl methanoate are position isomers

Answer: C

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15. In which of the following, homolytic bond fission takes place?

A. Alkaline hydrolysis of ethyl chloride

B. Addition of HBr to double bond

C. Free radical chlorination of methane

D. Nitration of Benzene

Answer: C

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16. For the preparation of Alkanes, aqueous solution of sodium or potassium salt of carboxylic acid ist subjected to

A. Hydrolysis

B. Oxidation

C. Hydrogenation

D. Electrolysis

Answer: D

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17. Which one of the following is not a common component of photo-chemical smog?

A. Ozone

B. Acrolein

C. Peroxy acetyl nitrate

D. Chloro flouro carbons

Answer: D

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18. Which of the following crystals has unit cell such that $a \neq b \neq c$ and $\alpha \neq \beta \neq \gamma \neq 90^\circ$?

A. $K_2Cr_2O_7$

B. $NaNO_3$

C. KNO_3

D. K_2SO_4

Answer: A

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19. The correct statement regarding defect in solids is

A. Frenkel defect is usually favoured by a very small difference in the sizes of cations and anions.

B. Frenkel defect is not a dislocation defect

C. Trapping of an electron in the lattice leads to the formation of F-centers.

D. Schottky defect has no effect on the physical properties of solids.

Answer: B

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20. In a face centred cubic arrangement of A and B atoms in which 'A' atoms are at the corners of the unit cell and .B. atoms are at the face centers, one of the 'A' atoms is missing from one corner in the unit cell. The simplest formula of the compound is

A. A_7B_{24}

B. A_7B_8

C. AB_3

D. A_7B_3

Answer: A

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21. Which of the following aqueous solutions has highest freezing point?

A. 0.1 molal $Al_2(SO_4)_3$

B. 0.1 molal $BaCl_2$

C. 0.1 molal $AlCl_3$

D. 0.1 molal NH_4Cl

Answer: D

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22. The Van't Hoff factor (i) accounts for

A. extent of solubility of solute

B. extent of dissociation of solute

C. extent of dissolution of solute

D. extent of mobility of solute

Answer: B

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23. When the pure solvent diffuses out of the solution through the semi-permeable membrane then the process is called

A. Osmosis

B. Reverse osmosis

C. Sorption

D. Dialysis

Answer: B

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24. The standard reduction potential at 298 K for the following half cell reaction are

$Zn^2(aq) + 2e \rightarrow Zn(s) E^\circ = -0.762V$

$Cr^{3+}(aq) + 3e \rightarrow Cr(s) E^\circ = 0.740V$

$2H^+(aq) + 2e \rightarrow H_2(g) E^\circ = 0.0V$

$F_2(g) + 2e \rightarrow 2F^-(aq) E^\circ = 2.87V$

Which of the following is strongest reducing agent ?

A. $Zn(s)$

B. $Cr(s)$

C. $H_2(g)$

D. $F_2(g)$

Answer: A

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25. By passing electric current, $NaClO_3$, is converted into $NaClO_4$, according to the following equation:

$NaClO_3 + H_2O \rightarrow NaClO_4 + H_2$

How many moles of $NaClO_4$„ will be formed when three Faradays of charge ispassed through $NaCIO_3$?

A. 0.75

B. 1

C. 1.5

D. 3

Answer: C

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26. In the electrolysis of aqueous sodium chloride solution, which of the half cell reactions will occur at anode?

A. $Na^+(aq) + e^- \rightarrow Na(s) E^\circ = -2.71$ volts

B. $2H_2O(l) \rightarrow O_2 + 4H^+ + 4e^- E^\circ_{\text{cell}} = 1.23$ volts

C. $H^+(aq) + e^- \rightarrow \frac{1}{2}H_2 \quad E^\circ_{\text{cell}} = 0.00$ volts

D. $Cl^-(aq) \rightarrow \frac{1}{2}Cl_2 + e^- \quad E^\circ_{\text{cell}} = 1.36$ volts

Answer: D

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27. Which of the following statements is in accordance with the Arrhenius equation?

A. Rate of a reaction increases with increase in temperature.

B. Rate of a reaction increases with decrease in activation energy.

C. Rate constant decreases exponentially with increase in temperature.

D. Rate of a reaction does not change with increase in activation energy.

Answer: A::B

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28. Which of the following statements is incorrect?

A. The rate law for any reaction cannot be determined experimentally.

B. Complex reactions have fractional order.

C. Biomolecular reactions involve simultaneous collision between two species.

D. Molecularity is only applicable for elementary reaction.

Answer: B

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29. For a reaction $1/2A \rightarrow 2B$ rate of disappearance of A is related to rate of appearance of B by the expression

A. $\frac{-d[A]}{dt} = 4\frac{d[B]}{dt}$

B. $\frac{-d[A]}{dt} = \frac{1}{4}\frac{d[B]}{dt}$

C. $\frac{-d[A]}{dt} = \frac{1}{2}\frac{d[B]}{dt}$

D. $\frac{-d[A]}{dt} = \frac{d[B]}{dt}$

Answer: B

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30. The process which is responsible for the formation of delta at a place where rivers meet the sea is

A. Coagulation

B. Colloid formation

C. Emulsification

D. Peptization

Answer: A

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31. Hydrogenation of vegetable oils in the presence of finely divided nickel as catalyst. The reaction is

A. Heterogeneous catalysis

B. Homogeneous catalysis

C. Enzyme catalysed reaction

D. Liquid catalysed reaction

Answer: A

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32. Which of the following is not a favourable condition for physical adsorption:

A. High temperature

B. High pressure

C. Higher critical temperature of adsorbate

D. Low temperature.

Answer: A

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33. The metal extracted by leaching with a cyanide

A. Al

B. Ag

C. Cu

D. Na

Answer: B

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34. Extraction of chlorine from brine solution is based on

A. Oxidation

B. Chlorination

C. Reduction

D. Acidification

Answer: A

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35. Which of the following elements forms $p_\pi - p_\pi$ bond with itself?

A. N

B. P

C. Se

D. Te

Answer: A

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36. Which one of the following metallic oxides exhibits amphoteric nature?

A. CaO

B. Na_2O

C. BaO

D. Al_2O_3

Answer: D

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37. Select the wrong chemical reaction among the following:

A. $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$

B. $8NH_3 + 3Cl_2 \rightarrow 6NH_4Cl + N_2$

C. $2NaOH + Cl_2 \rightarrow 2NaCl + H_2 + O_2$

D.

$$2Ca(OH)_2 + 2Cl_2 \rightarrow Ca(OCl)_2 + CaCl_2 + 2H_2O$$

Answer: C

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38. Which one of the following noble gases has an unusual property of diffusing through the materials such as rubber, glass or plastic?

A. Ne

B. Ar

C. Kr

D. He

Answer: D

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39. The magnetic nature of elements depends on the presence of unpaired electrons. Identify the configuration of transition elements which shows highest magnetic moment?

A. $3d^7$

B. $3d^5$

C. $3d^8$

D. $3d^2$

Answer: B

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40. Which of the following statements is wrong regarding Lanthanoids?

A. Ln(III) compounds are generally colourless.

B. Ln(III) compounds are predominantly ionic in character.

C. The ionic size of Ln(III) ions decreases with increasing atomic number.

D. Ln(III) hydroxides are mainly basic in nature. .

Answer: A

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41. Square planar complex of the type MAXBL (where A, B, X and L are unidentate ligands) shows following set of isomers

A. Two cis and one trans

B. Two trans and one cis

C. Two cis and two trans

D. Three cis and one trans

Answer: A

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42. According to crystal field theory, the M-L bond in a complex is

A. purely ionic

B. purely covalent

C. purely co-ordinate

D. partially covalent

Answer: A

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43. The co-ordination number and the oxidation state of the element .M. in the complex $\left[M(en)_2(C_2O_4)\right]NO_2$ {where (en) is ethan-1, 2-diamine} are respectively

A. 6 and 3

B. 6 and 2

C. 4 and 2

D. 4 and 3

Answer: A

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44. Toluene reacts with halogen in presence of Iron (III) chloride giving ortho and para halo compounds. The reaction is

A. Electrophilic elimination reaction

B. Electrophilic substitution reaction

C. Free radical addition reaction

D. Nucleophilic substitution rcaction.

Answer: B

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45. In the following sequence of reactions

$$CH_3Br \xrightarrow{KCN} A \xrightarrow{H_3O^+} B \xrightarrow{\mathrm{LiAlH_4}} C$$

the end product C is

A. Acetone

B. Methane

C. Acetaldehyde

D. Ethyl alcohol

Answer: D

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46. Which of the following orders is true regarding the acidic nature of phenol?

A. Phenol $>$ O-cresol $>$ O-nitrophenol

B. O-cresol $<$ phenol $<$ O-nitrophenol

C. phenol $<$ 0-cresol $>$ O-nitrophenol

D. phenol $<$ O-cresol $<$ O-nitrophenol III

Answer: B

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47. Which of the following reagents cannot be used to oxidize primary alcohols to aldehydes?

A. CrO_3 in anhydrous medium

B. $KMnO_4$ in acidic medium

C. Pyridinium chloro chromate

D. Heating in presence of Cu at 573 K

Answer: B

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48. Cannizzaro.s reaction is an example of auto oxidation.

A. It is a typical reaction of aliphatic aldehyde

B. It is a reaction answered only by aromatic aldehydes

C. It is a reaction answered by all aldehydes.

D. It is a reaction answered by only aldehydes containing a-hydrogen.

Answer: B

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49. Lower members of aliphatic carboxylic acid are soluble in water. This is due to

A. formation of hydrogen bonds with water

B. Vander Waals interaction with water molecules

C. water is non-electrolyte

D. London forces

Answer: A

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50. The correct order of increasing basic nature for the bases $NH_3CH_3NH_2$ and $(CH_3)_2NH$ in aqueous

solution

A. $CH_3NH_2 < NH_3 < (CH_2)_2NH$

B. $(CH_3)_2NH < NH_3 < CH_3NH_2$

C. $NH_3 < CH_3NH_2 < (CH_2)_2NH < NH$

D. $CH_3NH_2 < (CH_3)_2NH < NH_3$

Answer: C

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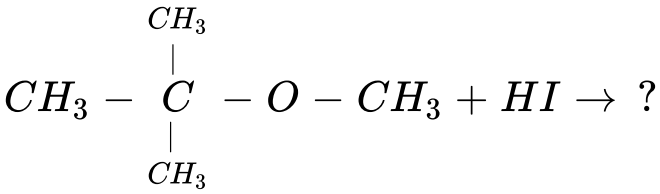
51. The product formed during the following reaction are



A. $CH_3OH + CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - I$

B. $CH_3I + CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - OH$

C. $CH_3OI + H_3C - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - H$

D. $CH_4 + H_3C - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - OI$

Answer: A

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52. Reduction of ketones cannot be carried out with which of the following reagents?

A. Sodium borohydride or Lithium aluminium hydride

B. Zinc amalgam and concentrated HCl

C. Hydrazine and KOH in ethylene glycol

D. Hydrogen in presence of palladium in Barium sulphate and quinoline

Answer: D

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53. Gabriel phthalimide synthesis is used in the preparation of primary amine from phthalimide. Which of the following reagents is not used during the process?

A. KOH

B. NaOH

C. HCl

D. Alkyl Halides

Answer: C

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54. The Glycosidic linkage present in sucrose is between

A. C-1 of α-glucose and C- 2 of β B-fructose

B. C-1 of α -glucose and C-4 of α-glucose

C. C-1 of β-galactose and C-4 of α-glucose

D. C-1 of α-glucose and C-4 of β-fructose

Answer: A

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55. Hormones are secreted by ductless glands of human body. Iodine-containing hormone is

A. Insulin

B. Thyroxine

C. Testosterone

D. Adrenoline

Answer: B

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56. Pick the wrong statement from the following:

A. Sources of Vitamin B_1 are yeast, milk, green vegetables and cereals

B. Deficiency of Vitamin B_6 (pyridoxime) results in convulsions

C. Consumption of citrus fruits and green leafy vegetables in food prevents scurvy

D. Deficiency of vitamin D causes xerophthalmia.

Answer: D

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57. The monomers used in Novolac, a polymer used in paints,

A. Phenol and Formaldehyde

B. Melamine and Formaldehyde

C. Butadiene and Styrene

D. Butadiene and Acrylo Nitrile

Answer: A

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58. Which of the following is not a biodegradable polymer?

A. Polyhydroxy butyrate -CO-β-hydroxy valerate

B. PHBV

C. Nylon 2-Nylon-6

D. Glyptal

Answer: B

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59. Bactericidal antibiotics among the following is

A. Ofloxacin

B. Erythromycin

C. Tetracycline

D. Chloramphenicol

Answer: A

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60. Pick the correct statement among the following:

A. Cetyl trimethyl ammonium bromide is a popular cationic detergent used in hair conditioner.

B. Non-ionic detergent is formed when polyethylene glycol reacts with adipic acid.

C. Sodium dodecyl benzene sulphonate used in tooth paste is a cationic detergent.

D. Sodium lauryl sulphate forms an insoluble sçum with hard water.

Answer: A

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